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(54) **ACCESSORIES FOR PORTABLE  
ELECTRONIC DEVICES**

(71) Applicant: **Apple Inc.**, Cupertino, CA (US)

(72) Inventors: **Aidan N. Zimmerman**, Sunnyvale, CA (US); **Bradley J. Hamel**, San Carlos, CA (US); **Christopher J. Stringer**, Woodside, CA (US); **Markus Diebel**, San Francisco, CA (US); **Sung-Ho Tan**, San Francisco, CA (US); **Mikael M. Silvano**, San Francisco, CA (US); **Kevin M. Robinson**, Sunnyvale, CA (US); **Daniel L. McBroom**, Leander, CA (US); **Michael D. McBroom**, Leander, CA (US)

(73) Assignee: **Apple Inc.**, Cupertino, CA (US)

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CPC ..... **G06F 1/1632** (2013.01); **A45C 11/00** (2013.01); **F16M 11/38** (2013.01); **G06F 1/1643** (2013.01); **G06F 1/1698** (2013.01); **A45C 2011/002** (2013.01); **A45C 2011/003** (2013.01); **A45C 2200/15** (2013.01); **G06F 1/1626** (2013.01)

(58) **Field of Classification Search**

CPC combination set(s) only.

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

6,353,529 B1	3/2002	Cies	
7,911,784 B2	3/2011	Jones	
7,916,468 B2 *	3/2011	Takizawa	F16M 11/105 361/679.41
8,842,423 B2 *	9/2014	Griffin	G06F 1/1626 248/919

(Continued)

**FOREIGN PATENT DOCUMENTS**

CN 202927395 U 5/2013

*Primary Examiner* — Lisa Lea-Edmonds

(74) *Attorney, Agent, or Firm* — Dickinson Wright RLLP

(57) **ABSTRACT**

Accessory devices for portable electronic devices are described. An exemplary accessory device can include a first segment coupled to a second segment via a first hinge assembly. The accessory can include a third segment coupled to the second segment via a second hinge assembly such that the second segment is positioned between the first and third segments. The accessory device can be arranged between a closed configuration and a configuration of a stand that supports the portable electronic device at a viewing angle. At the support configuration, the second segment can be at an acute angle relative to the first segment to shift the center of gravity of the system towards the middle. The third segment can be suspended above the first segment and be inclined outwards. The hinge assemblies of the system can be sufficiently stiff to withstand the weight of the electronic device.

**20 Claims, 12 Drawing Sheets**

